WEST Search History

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DATE: Tuesday, September 21, 2004

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☐	L8	l5 same (power adj (mode or state))	5
☐	L7	L5 same (power$4 near2 reset)	1
☐	L6	L5 same (power adj on adj reset)	0
☐	L5	(switched adj mode adj (power adj (source or supply$4)))	1730
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☐	L3	((switch$4 adj mode) near2 pump)	25
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L8: Entry 5 of 5 File: EPAB Apr 1, 1999

DOCUMENT-IDENTIFIER: WO 9916163 A2
TITLE: SWITCHED-MODE POWER SUPPLY

Abstract Text (1):
CHG DATE=19990905 STATUS=O>The switched-mode power supply operates on the series resonant converter principle and comprises a first capacitor (C19) on the primary side, to which both a voltage modulated at the mains frequency and a voltage modulated at the switching frequency of the switched-mode power supply are applied. A current which is proportional to the load and has low harmonics is drawn from the mains (UN) via this capacitor and via a power factor correction circuit (D15, L15, D17, C17), so that future standards for harmonic loads on the mains are complied with or are well undershot. The series resonant converter can, in particular, be designed as a series/parallel resonant converter, the resonant converter essentially oscillating via the series tuned circuit in the normal mode, and essentially via the parallel tuned circuit in a low-power mode. The series/parallel resonant converter is thus particularly highly suitable for devices having a low-power standby mode, such as television sets or computer monitors, for example.

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L8: Entry 1 of 5 File: USPT Aug 13, 2002

DOCUMENT-IDENTIFIER: US 6434030 B1
TITLE: Arrangement having a switched-mode power supply and a microprocessor

Abstract Text (1):
A switched-mode power supply with a control loop and a microprocessor has a normal mode and a low-power mode with a burst mode. The microprocessor is connected via an output to the control loop and uses this to control the burst mode of the switched-mode power supply directly. The control loop of the switched-mode power supply monitors, in particular, a secondary output voltage, so that the output of the microprocessor is connected to the control loop, for example via a simple resistor network or a transistor stage. The clock frequency and the duty cycle of the burst mode are permanently stored in the microprocessor and can be defined for the switched-mode power supply directly, for example using TTL logic.

Brief Summary Text (2):
The invention is based on an arrangement having a microprocessor and a switched-mode power supply with a control loop, the switched-mode power supply having a normal mode and a low-power mode, e.g. a standby mode, with a burst mode. Arrangements of this type are used in television sets or video recorders, for example.

Brief Summary Text (3):
In the low-power mode, switched-mode power supplies frequently use a so-called burst mode, in which the switching transistor is turned off completely at a low clock frequency, e.g. 100 Hz, during an off-phase. During the on-phase of the burst mode, the switched-mode power supply operates at its normal switching frequency, at which there is active control, e.g. 16 kHz. This means that the burst mode ensures that the switched-mode power supply transfers power to the secondary side only during the short interval of the on-phase, in which the said switched-mode power supply is able to operate at a high switching frequency; as a result of this, a switched-mode power supply, in particular an isolating-transformer switched-mode power supply, can be used to achieve very low standby powers. Switched-mode power supplies having a burst mode are disclosed in EP-A 0 386 989 and DE-A-195 18 863, for example.

Brief Summary Text (8):
According to the invention, a switched-mode power supply having a control loop and having a normal mode and a low-power mode with a burst mode is connected to a microprocessor connection by means of which the said microprocessor controls the burst mode of the switched-mode power supply. Since devices such as television sets or video recorders usually already have a microprocessor anyway, the circuit complexity for the burst mode is very low. This is particularly true in a switched-mode power supply with mains isolation if the control loop of the switched-mode power supply monitors a secondary output voltage, so that the output of the microprocessor can be connected directly to the control loop via one or more resistors or possibly a transistor stage. In battery-operated devices without mains isolation, the arrangement can be designed in the same way.

Brief Summary Text (10):
A fixed duty cycle can be defined for the burst mode by the microprocessor, which

provides steady burst-mode operation even with very low standby powers, such as 2 watts. By changing the clock frequency and the duty cycle, the switched-mode power supply can be matched quickly to changes in conditions. The burst mode can be started in a controlled manner whenever a user switches the appropriate device to the low-power mode, and is not produced indirectly, as is presently the case in a television set, for example, where turning off the deflection and the video stages, which causes the output voltages of the switched-mode power supply to rise, initiates the low-power-mode.

Brief Summary Text (11):
In the low-power mode, the microprocessor-controlled burst mode can also reduce the output voltages considerably, for example to 50%. In a television set, this can produce a soft picture collapse. For this type of use, when a user switches the television set to low-power mode, the microprocessor firstly reduces the system voltage and only then, after a delay, turns off the deflection and the video circuit. Without this procedure, the picture tube of the television set would light up briefly. When switching from low-power mode to normal mode, the deflection and the video stage are switched on after a delay, and only after the output voltages of the switched-mode power supply have stabilized. This means that faults in the deflection cannot occur when it is turned on, because, when it is turned on, its power consumption loads the output voltages of the switched mode power supply significantly, so that voltage fluctuations can occur.

Brief Summary Text (12):
In addition, the microprocessor-controlled burst mode reliably handles an overload, caused by a short circuit, for example. In the previous burst mode, the switched-mode power supply would change over to the normal mode in the event of a short circuit, because the higher power requirement causes it to assume that the television set has been switched to normal mode. In the microprocessor-controlled burst mode, on the other hand, the burst mode is defined to be fixed, and changeover is possible only as a result of a user command via the microprocessor. It is likewise impossible for the switched-mode power supply to change to the burst mode unintentionally, for example if the power consumption in the normal mode is very low for a short time. Since the burst mode is initiated indirectly in previous designs, never directly by a user, the logic decision for the switched-mode power supply to change to the required low-power mode is never as reliable as when there is direct input via the microprocessor.

Detailed Description Text (5):
FIG. 2 shows the secondary control loop, based on the voltage U3 to be regulated, and the secondary circuitry of the optocoupler 13. Two transistor stages T2 and T3 are used to amplify fluctuations in the output voltage U3 and transmit them to the input 24 of the optocoupler. In this exemplary embodiment, the output 19 of the microprocessor 16 is connected to the control loop via a simple transistor stage 21 comprising a transistor T4 and two resistors 22, 23. Using a TTL signal, the microprocessor 16 can switch between low-power mode and normal mode: when the output 19 switches to "0" or "low", then the transistor T4 is off and the voltage U4 at the base of the transistor T3 is high, so that the transistor T2 is on and, as a result, the output voltage U3 is actively controlled. If the output signal from the output 19 is "high", then transistor T4 is on and therefore pulls down the base voltage U4. This turns on the transistor T3 fully, so that a maximum signal is transmitted via the optocoupler 13, as a result of which the switched-mode power supply turns off.

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L4: Entry 3 of 4 File: EPAB May 20, 1992

DOCUMENT-IDENTIFIER: EP 485865 A1
TITLE: Circuit for operating a discharge lamp.

Abstract Text (1):
CHG DATE=19990617 STATUS=O> In a circuit for operating a discharge pump consisting of a switched-mode power supply with a control circuit, optionally of an inverter and of a starting device, a voltage sensor in the form of an RC network (R1, R3) is connected between the control circuit (ST) and the point (A1) connecting the active semiconductor switch (T1) and the inductance (DR) of the switched-mode power supply. The voltage sensor ensures that the active semiconductor switch (T1) is turned on precisely at the instant when the energy stored in the inductance (DR) has leaked away and the reverse recovery time of the passive semiconductor switch (D1) has expired so that the switched-mode power supply is operated in a "discontinuous mode".

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L4: Entry 3 of 4 File: EPAB May 20, 1992

PUB-NO: EP000485865A1
DOCUMENT-IDENTIFIER: EP 485865 A1
TITLE: Circuit for operating a discharge lamp.

PUBN-DATE: May 20, 1992

INVENTOR-INFORMATION:

NAME	COUNTRY
BERNITZ, FRANZ	DE
HUBER, ANDREAS	DE
HANSMANN, FRANK	DE

ASSIGNEE-INFORMATION:

NAME	COUNTRY
PATRA PATENT TREUHAND	DE

APPL-NO: EP91118850
APPL-DATE: November 5, 1991

PRIORITY-DATA: DE04036604A (November 16, 1990)

INT-CL (IPC): H02M 3/156; H05B 41/29
EUR-CL (EPC): H02M003/156; H05B041/288

ABSTRACT:

CHG DATE=19990617 STATUS=O> In a circuit for operating a discharge pump consisting of a switched-mode power supply with a control circuit, optionally of an inverter and of a starting device, a voltage sensor in the form of an RC network (R1, R3) is connected between the control circuit (ST) and the point (A1) connecting the active semiconductor switch (T1) and the inductance (DR) of the switched-mode power supply. The voltage sensor ensures that the active semiconductor switch (T1) is turned on precisely at the instant when the energy stored in the inductance (DR) has leaked away and the reverse recovery time of the passive semiconductor switch (D1) has expired so that the switched-mode power supply is operated in a "discontinuous mode". 

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L4: Entry 1 of 4 File: USPT Apr 9, 2002

DOCUMENT-IDENTIFIER: US 6369552 B2
TITLE: Regulated auxiliary power supply

CLAIMS:

9. In a switched mode power supply having an integrated circuit controller to provide voltage regulation, and having a source of varying voltage, the switched mode power supply being operable in a normal mode and in a standby mode in which the output voltage is substantially reduced, a circuit for powering the controller during standby mode comprising:

a charge pump circuit having an input and an output, the input coupled to the source of varying voltage for receiving power therefrom, the output coupled to the input power supply terminal of the integrated circuit controller, and a switch coupled to the charge pump for controlling the voltage output of the charge pump when the switched mode power supply is in standby mode.

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L4: Entry 2 of 4 File: USPT Oct 17, 1995

DOCUMENT-IDENTIFIER: US 5459654 A
TITLE: Apparatus for generating positive and negative supply rails from operating motor control circuit

Brief Summary Text (8):
A known method of solving this problem is to provide an additional voltage supply which generates supply rails below ground or above V.sub.CC. These additional voltage supplies generally add cost and complexity to the circuit because they require the integration of a charge pump or, in some cases, a switching mode power supply and an external inductor.

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